

REMARKS

Claims 29-48 are now in the application. Claim 29 has been amended to recite that the metal base material is “for automobile body and automobile parts” and “comprises at least iron material”. Claim 29 has also been amended by deleting the phrase “in a wet condition”. The amendments to the claims do not introduce any new matter.

Claims 29 and 31-48 are rejected under 35 USC 103(a) as being unpatentable over US Patent Application Publication 2002/0175082 A1 to Sakamoto et al. in view of US Patent 6,180,177 B1 to Nagashima. Claim 30 was rejected under 35 USC 103(a) as being unpatentable over Sakamoto et al in view of Nagashima and further in view of US Patent Application Publication 2004/0009300 A1 to Shimakura. The cited references do not render obvious the present invention. An important aspect of the present invention is that the cation electrodeposition coating method is carried out on an iron material without drying.

Claim 29 was rejected as being obvious over Sakamoto et al. which, according to the Office Action, discloses a cation electrodeposition coating method without explicitly teaching to carry out drying after the chemical conversion treatment, in view of Nagashima which discloses a surface treating agent corresponding to the chemical conversion treating agent used in the present invention.

Although Sakamoto et al. does not explicitly teach carrying out drying in the cation electrodeposition coating method, Sakamoto et al. does not disclose specific means for carrying out the cation electrodeposition coating after the chemical conversion treatment, without drying. There is only one suggestion of a zinc phosphate surface treating agent and a zirconium based chemical conversion treating agent being used in the Examples. However, the Example in which a zinc phosphate surface treating agent is used is an example of subject matter which should be primarily excluded from the presently claimed invention (please see, Background Art of the specification of the present application). Using a zinc phosphate surface treating agent creates a negative environmental impact, whereby problems of generation of sludge and the like can be caused (see, Background Art of the specification of the present application). Since the presently claimed invention was made in order to primarily solve such problems, Sakamoto et al. which is

related to a zinc phosphate surface treating agent is not a proper reference to be cited against the claimed invention in a rejection based on nonobviousness.

Therefore, Sakamoto et al. is not a proper prior art to be raised as teaching of the presently claimed invention.

In fact, the silane coupling agent used in the examples of Sakamoto et al. is “Alsurf 301W1”. Though Alsurf 301N- 1 is one member of the Alsurf 301 series of surface treatment agents, this series of surface treatment agents is recommended to be used as surface treatment agents for aluminum, and not for iron material (Please note that the Surfdraw series of surface treatment agents on page 9 of the submitted catalog are recommended to be used for iron material.) On the other hand, the present invention concerns a treatment method which can form a chemical conversion coating film with a good property even on an iron based metal material, and the specific surface treatment agent containing an amino group containing coupling agent, hydrolysate thereof and polymer thereof as essential components are used in order to accomplish such a purpose.

The present invention, as recited in the amended claims, is directed to cation electrodeposition coating carried out without drying, after a chemical conversion treatment on a metal base material including at least an iron material. As described in paragraph [00051] of the specification of the present application, when an iron material is subjected to a surface treatment with a zirconium based surface treating agent, problems of inferior corrosion resistance and deteriorated adhesion onto the top layer coated film occur. According to the presently claimed invention, such problems can be solved by including an amino group-containing silane coupling agent, hydrolysate thereof and polymer thereof in the surface treating agent. Additionally, Sakamoto et al. does not disclose any method to carry out the cation electrodeposition coating without drying on a metal base material including an iron material.

Furthermore, it was stated in the Office Action, that the cation electrodeposition coating carried out in wet condition is found in Sakamoto et al. However, no such description could be found in Sakamoto et al. Possibly, this statement was based on a coating process on an upper layer coating film of a cation electrodeposition paint. In general, automobile coating involves

multiple coating steps of paints in addition to a chemical conversion paint and cation electrodeposition paint, such as e.g., “chemical conversion treatment —. cation electrodeposition coating — coating of under coat paint — coating of middle coat paint - coating of top coat paint”.

Moreover, Sakamoto et al. does not explicitly describe that the cation electrodeposition coating can be carried out after the surface treatment in a wet condition, although a description with respect to carrying out middle paint coating or the like with wet-on-wet is found. Accordingly, it is speculated that the description of coating in wet condition in Sakamoto et al. urged in the Office Action would be a coating process for the middle coat paint.

It is therefore submitted that the finding in the Office Action was not properly made in view of the subject matter of the presently claimed invention which involves a chemical conversion treatment and cation electrodeposition coating.

Nagashima and Shimakura fail to overcome the above disclosed deficiencies of Sakamoto et al. with respect to rendering obvious the present invention. The surface treating agents suggested in Nagashima and Shimakura are application type surface treating agents, which cannot be originally used in surface treatments of automobile body and automobile parts. More specifically, since the metal base materials used for automobile body and automobile parts have complicated shapes, it is difficult to carry out the surface treatment entirely when an application type surface treating agent is used which is employed with a mode of applying a paint on the metal base material.

Nagashima discloses a composition for surface treatment including: a certain metal ion; at least one acid component selected from the group consisting of fluoro-acid, phosphoric acid, and acetic acid; a silane coupling agent which contains a certain functional group; and a particular phenol resin (please see the Abstract).

The composition for surface treatment suggested in Nagashima is a surface treating agent for coating. However, the surface treating agent disclosed in Nagashima et al. is different from the surface treatment agent used in the present invention, in the point that the surface treating agent of Nagashima et al. contains a phenol resin as an essential component. More specifically,

the present invention is non-obviousness in that:

i) as the phenol resin in the surface treating agent of Nagashima et al. considerably contributes to corrosion resistance (column 7, lines 6, 13, and 21 of Nagashima et al.) and adhesiveness (column 7, line 21 of Nagashima et al.), there is no incentive to remove the phenol resin from the surface treating agent.; and

ii) as corrosion resistance and adhesiveness clearly decreases in the comparative examples 4 and 5 which use a surface treating agent containing general phenol resin or acrylic polymer, one of ordinary skill in art referring to Nagashima et al., would not have motivation to remove the phenol resin from the surface treating agent.

Moreover, known surface treating agents include: application type surface treating agents which are applied by coating a surface treating liquid on a metal base material followed by drying; and reaction type surface treating agents (i.e. chemical conversion agent) which are applied by immersing a metal base material in a surface treating liquid to form a coating film over the surface of the metal material by a chemical reaction between the metal base material and the surface treatment agents (Please refer to the paragraph [0018] of the Specification of the present application).

Among these two types of surface treatment agents, it is difficult for the application type surface treatment agent to form a uniform coating film on metal materials having complicated shapes, such as automobile bodies. This is because even though it is possible to apply and dry the surface treatment agent uniformly on a flat metal material, it is difficult to apply the surface treatment agent in a uniform thickness, and to dry the same uniformly.

However, in the present invention, because the reaction type surface treatment agent (chemical conversion agent) is used, it is possible to form a chemical conversion coating film on the entire surface of the metal material which contacts the surface treatment agent. Therefore, it is possible to form a uniform coating film even on the surface of metal materials having complicated shapes, such as automobile bodies.

Moreover, as the treatment method of the present invention is conducted as a pretreatment method of a cation electrodeposition coating process, cation electrodeposition coating is conducted as a wet process, which is conducted by immersing the metal material such as an automobile body in a soluble cation electrodeposition paint. As the present invention uses a

surface treatment agent of a predetermined composition, a chemical conversion coating film adhering strongly to the surface of metal material is obtained, and the surface of the metal material can be washed with water without drying (last sentence of paragraph [0018] of the Specification of the present application). Therefore, all of the processes from the surface treatment process to the cation electrodeposition coating process can be conducted as wet processes.

The surface treatment agent used in the present invention is shown to be a reaction type surface treatment agent in the claims with the description that “chemical conversion coat” is formed by a surface treatment agent.

Nagashima discloses that drying is preferred and employs heat drying after the treatment in all Examples. In other words, the surface treating agent used in Nagashima et al. is an application type surface treatment agent. It is apparent that the surface treating agent of Nagashima et al. cannot be used in the surface treatment of objects having complicated shapes, because the invention disclosed in Nagashima et al. was intended to be applied as the surface treatment of a flat plate (please see column 1, line 19 of Nagashima et al.).

Shimakura suggests coating a metallic strip with at least one anticorrosion layer, followed by coating with at least one paint like layer and/or at least one paint layer, in which the anticorrosion layer is formed by bringing a metal surface into contact with an aqueous dispersion containing: an organic film former comprising a water soluble or water dispersible polymer; cations selected from the group of titanium, zirconium, and hafnium; and certain inorganic fine particles, and then drying. In paragraph [0069] of the specification of Shimakura, peroxide, hydroxylamine based compounds, nitroguanidine based compounds, and nitrate based compound are described as accelerators.

The presently claimed invention relates to a cation electrodeposition coating method in which a reaction type surface treating agent is used which can be used in chemical conversion treatment by a procedure such as immersion. According to the gist of the restriction of the metal base material to “base material for automobile body and automobile parts”, the chemical conversion treating agent may be regarded as being restricted to a reaction type of surface treating agent.

Claims 29, 32-43 and 47-48 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of US Patent 7,250,193. This rejection will be properly addressed upon an indication that the remaining rejections have been overcome.

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

The Office is authorized to charge any necessary fees to Deposit Account No. 22-0185, under Order No. 27617-00003-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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